Internet Direct Marketing Success of Farm Businesses in the U.S.: A Web-based Survey

Trent Ball and Yann Duval*

Abstract:
Both the number of farmers with Internet access and that of online shoppers have increased dramatically in recent years. Internet access not only allows farmers to manage input supplies more efficiently, it also permits them to reach their customers more directly. A web-based survey of farmers listed in Smallfarms.com and Localharvest.com was implemented to understand the factors that affect online direct marketing success. A majority of the respondents already consider their online activities at least somewhat successful. On average, farmers attribute a 27% increase in total sales to their Internet direct marketing efforts. Internet direct marketing activities appears complementary to conventional direct marketing methods. Type of products sold, having a company web site, time availability and expertise are identified as the most important factors in Internet direct marketing success. Maintaining an up-to-date company web site, and regular e-mailing to customers appear to be associated with farmers' Internet marketing success.

Keywords: Direct Marketing, Internet, Internet survey, e-commerce, small farms.

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Introduction

The Internet has rapidly become a powerful alternative marketing tool for many companies in the U.S., which use it to promote and sell products more quickly and efficiently. One of the characteristics of the Internet is that it allows almost anyone in the supply chain to reach customers more directly and at much lower costs than using other media. For example, large input supply companies have taken advantage of the Internet by building online market places where farmers can freely gather information on products such as seed, fertilizers, and equipment. The main advantage for these companies is lower transaction costs and increased product awareness and visibility.

A survey by the National Agricultural Statistics Service (NASS) reported that almost 43 percent of the U.S. farms had access to the Internet in 2000, as compared to only 29 percent in 1999. This increase in computer and Internet literacy creates a large economic potential for e-commerce in agriculture. The main advantage for farmers is the ability to retrieve product information, do comparison-shopping and place orders around the clock without leaving the farm.

However, Internet access not only allows farmers to manage input supplies more easily, it also provides them with a direct marketing alternative. Some farmers have already started direct marketing their products via the Internet. In this study, a survey of a number of these innovators from across the U.S. was implemented to understand the factors that affect the success of farmers' Internet direct marketing activities. Internet direct marketing activities as defined in this study includes all online and offline activities

related to promoting, advertising, and/or selling farm products online, via a web site or by e-mail.

Two important trends have recently affected U.S. agriculture: increased direct marketing of farm products, and increased reliance on information technology and the Internet. The USDA (1998) reports that direct marketing from farmers to consumers has increased in the past few years, mostly because more consumers are willing to pay for fresher and organically grown foods as indicated by the studies of Connel et al. (1986), Eastwood et al. (1986) and Rhodus et al. (1994). Consumers perceive that products bought directly from the farm may be more natural and of higher quality, allowing farmers to increase prices (Govindasamy, 1999).

Farmers use several direct marketing techniques, including roadside stands, pick-your-own operations, and farmers markets. These methods allow farmers to reach the consumer directly and potentially increase their profit margin. From 1994 to 2000, there was a 64% increase in the number of farmers markets, with annual sales now exceeding $1 billion (USDA, 2000).

At the same time, the number of U.S. Internet users has increased dramatically in recent years, from 32.7% of the U.S. population in December 1998, to 44.4% in August 2000 (USDC, 2000). A recent AOL/Roper Starch Cyberstudy concluded that 56% of Internet users shopped on-line in 2000, almost twice as many as in 1998. Retail e-commerce sales continue to rise with an 8% increase in the third quarter of 2001 compared to the same quarter last year (U.S. Census Bureau, 2001).

The increasing popularity of online shopping make direct marketing of farm products via the Internet an attractive alternative as well as a likely complement to

conventional direct marketing methods of farm products. Indeed, it allows you to broadcast your message to a potentially large audience without costly advertising expenses, and to keep in touch with your customers through e-mail newsletters (Kantor, 1998). Many farmers already sell through the web. Examples include Bell's Farm (www.BELLSFARM.com), which markets grapefruit, oranges and pecans; and Westfield Farm (www.chevre.com/westfield/), which sells hand-crafted cheese.

In addition to individual online marketing efforts, a few attempts have been made to create centralized online marketplaces where consumers can contact and buy directly from a larger number of farmers. For example, Smallfarms.com is an online community for direct marketing of farm and food products created by Glenn Oshiro, a small farmer in Hawaii. For a small fee, farmers and direct marketers can list their farm and products on the site. The idea is that a large number of farmers direct marketing their product in one virtual market place will attract more visitors (customers) to the site. A similar concept has been implemented by Localharvest.com, a non profit organization which maintains a nation-wide listing of farmers and organizations involved in direct marketing of farm products.

Smallfarms.com (SF) and Localharvest.com (LH) were, to the authors' knowledge, the only online marketplaces of their kind when the study was conducted in early 2001. As the largest specialized directories of online direct marketing farms on the Internet, SF and LH members were an ideal starting point in our study of Internet direct marketing activities of small farm businesses in the U.S.. The methodology used to survey SF and SL members is presented next, followed by a descriptive analysis of the

survey results and an econometric analysis of the success of farmer's Internet direct marketing activities.

Methodology

A web-based survey methodology was developed since the entire population of SF and LH members was expected to be familiar with the Internet. A web-based survey allowed rapid and efficient gathering of information from the population while reducing coding and input errors associated with traditional survey methods (Dillman, 2000). Respondents answered the survey question from their own computer, and their answers were automatically stored in a database for analysis. Details of the survey implementation are provided in appendix A.

A total of 112 email addresses was collected from SF members, which represented the entire population of SF members at the time of the study. Relevant LH e-mail addresses were acquired by using keywords in the search portion of the web site[2]. Key words used included *web page*, *web site*, *Internet, online, www, and e-mail*. Random sampling using the keywords generated a total of 62 e-mails of LH members. Thus, e-mails were sent to a total of 174 SF and LH members to establish contact in February 2001. Two follow-up emails were sent to non-respondents over the 2 weeks that followed the first contact. In order to keep responses from the two groups of members separate, respondents from SF and LH were directed to different survey sites. E-mails and survey site contents were otherwise identical.

[2] In contrast with SF members, farmers listed on LH are not all proactively involved in Internet direct marketing, so only a portion of the LH members was of interest to us in this study.

The survey was intended to measure the potential success of the farmers, either as perceived by farmers themselves, or based on sales revenue attributed to Internet direct marketing activities. Based on the results of a preliminary survey conducted a year earlier with a much smaller sample (XXXXXXXX, 2001), it was hypothesized that farmers' Internet success would be positively affected by the amount of money spent on internet direct marketing activities, the amount of time spent on a computer, the type of farm product sold online, the use of e-mail, the location of the farm near a major urban center, and the availability of shipping services. The ownership of a company web site was also thought to affect farmers' success, along with the quality of information available on the company web site and the online payment options. Finally, older farmers were expected to be relatively less successful. Marital status and farm size were not expected to have significant impact on the farmers' success.

The first part of the survey inquired about type of farm products sold over the Internet. Section two focused on farmers' Internet sales and marketing. Section three included questions on success or failure of farmers' Internet activities, and an opportunity to rank the factors most important to achieving Internet marketing success. The respondents were then asked specific questions regarding their own farm web sites, followed by demographics. In the final section, respondents were given an opportunity to provide additional information and comments. The survey instrument is available from the authors upon request.

Results

A total of 102 emails were successfully delivered to SF members and 52 usable responses received. All 62 e-mails from the LH mailing list were successfully delivered,

and the response rate reached 65% with 40 responses. The combined LH and SF surveys resulted in an overall response rate of 56% and a data set of 92 usable observations.

Demographics

The survey population was slightly more female (52%) than male (48%). Most respondents were married (87%), with an average age of 46 years for the individual in charge of everyday business decisions. Farm size averaged 89 acres and ranged from less than one acre to 900 acres – Farm size standard deviation was 165.80 acres. Table 1 shows respondents by product categories. Note that farmers had the option of selecting more than one product category as long as it represented at least 10% of their total business sales. *Fruit and vegetables* is the most common category, while P*rocessed*, which includes smoked products and jellies, is the least common. Thirty-eight percent of the respondents are located within 50 miles of an urban area with over 150,000 inhabitants, while 23%, 13% and 26% live near urban areas of 50,000 to 150,000, 20,000 to 50,000, and less than 20,000 inhabitants, respectively.

Online Marketing Activities

As shown in table 2, almost half the farmers indicated that the primary goal of their online marketing activity was to allow customers to make purchases using the Internet. Others indicated that their objectives were specifically to increase their local customer base (40.45%) *or* to provide information to existing customers (11.24%). Localharvest.com and Smallfarms.com (LS) members' investments in Internet direct marketing has increased rapidly since 1998, from a $229 average to a $570 average in

2000. The number of farmers who spent money has also increased from only 15 in 1998 to 54 farmers in 2000 –about 60% of the respondents.

Most LS members (72%) have a company web site in addition to being listed in SF or LH. Of those that have a company web site, 63% have registered with a search engine, such as Yahoo or Excite. Almost 80% perceive their web site to be up to date and accurate. This is not very surprising given that LS farmers spend an average of 17 hours on their computer every week.

Although almost 60% of respondents agree that their Internet activity has been successful, more than two-third report that the Internet has not helped them save time marketing, promoting, or communicating their products. When asked to rank a number of factors thought to affect internet direct marketing success, LS members felt the *type of product offered* was most important, followed by *having a company web site* and *having available time*. *Money spent on the Internet activity* and the *location of the farm* appear to be least important (see Table 3).

While a majority of the LS farmer's (67%) use the Internet as a tool to communicate with customers by e-mail (see Table 2), *Sending regular e-mail newsletters* is found less than somewhat important (see Table 3). Similarly, While most LS farmers either do not offer shipping and delivery services (20%) or offer these services only locally (56%), the availability of a *variety of shipping services and options* is seen as a relatively important factor in Internet direct marketing success. Note that almost one-fourth of the respondents already ship products nationwide. Very few farmers have merchant accounts necessary to process credit card payments online even if providing

Internet customers with the ability to pay by credit card is ranked 6th (of 10) as an important factor for online direct marketing success.

Internet Sales and Customer Loyalty

Table 4 reports the effect of LS members' online efforts on sales and consumer loyalty. Of the 90 respondents, 67 indicated that they had received orders directly from the Internet, either through e-mail or a web site (74%). Ten respondents in 1998 reported that the orders they received represented 30% of total sales. In 1999 the average decreased to 22%, but the number of farmers receiving orders more than doubled to twenty-four. By the end of 2000, the number of farmers with Internet orders had more than doubled (55), yet the average for orders as a percent of their total sales had again declined slightly to 21%.

Sixty two percent of the farmer's felt that their Internet presence had increased total revenue of their operation. Seven farmers reported that their sales increased by nearly 31% in 1998 due to their Internet presence. In 1999, 18 farmers reported that their online marketing efforts increased sales by an average of almost 27 %. A similar increase in total revenue from online marketing was reported by 44 farmers in 2000 –i.e., almost 50% of the LS farmers.

Interestingly, the average total revenue growth associated with Internet direct marketing activities is larger than total revenue growth associated with e-mail or web site orders. This result indicates a spillover effect of Internet marketing activities on conventional direct marketing activities, such as roadside stands or farmers markets.

Explaining Farmers' Online Success: an Econometric Analysis

The objective of the analysis is to determine those factors that lead to a successful Internet marketing campaign. Two qualitative regression models are estimated. The first model is a binomial logit regression model of farmer's perceived increase in total sales from its Internet Direct Marketing efforts. The dependent variable (A4) takes a value of 1 when a respondent feels that his/her online efforts contributed to an increase in total revenue, and a value of 0 when he does not. The second model is an ordered multinomial probit regression model (OMPR) of farmer's perception of the success of his online marketing activities[3]. The dependent variable (A5) takes a value of 0 or 1 when farmers *strongly disagree* or *disagree* that their online marketing activities have been successful, respectively. Similarly, it takes a value of 2 or 3 when farmers *agree* or *strongly agree*, respectively.

In an attempt to verify hypotheses made earlier, 16 explanatory variables were considered for inclusion in the two models. Table 5 provides a summary of the expected relationship between each of the explanatory variable and the two dependent variables. A stepwise process was then used to reduce the number of independent variables and retain the variables that were most significant, given the relatively small sample size at hand[4].

Note that table 5 also includes the results of non-parametric cross-tabulation tests between each of the 16 variables and both independent variables considered in the econometric analysis. The chi-square analysis shows that both measures of farmers' Internet marketing success (i.e. A4 and A5) are significantly and positively correlated (at

[3] Both the binomial logit and ordered multinomial probit models are well-known econometric models that are particularly well suited for this analysis given the nature of the dependent variables. More information on these models can be found, for example, in Kmenta (1990).

[4] The stepwise procedure and the final model estimation were implemented in SAS.

the 10% confidence level) with whether or not a farmer has a company web site, whether the company website is regularly updated, whether the farmer sends regular email newsletters to it customers, and whether the farmer reports that its Internet marketing activities help him save time on promotion and advertising of its products. The importance of some of these variables is confirmed in the multivariate analysis reported in table 6.

Independent variables in the final binomial logit model included A2, which indicated whether a respondent had received orders over the Internet either through e-mail or the web site; A3, which showed whether LS members were actively using the Internet as a tool to communicate with customer's by e-mail (send newsletters, etc.); C4, which distinguished farmers who had a company web site from those who did not; and two demographic variables among which farm size (D6), and whether this individual was male or female (M6). Overall, the final binomial logit model performs well and predicts 80% of the outcomes correctly.

Variables A3, C4 and D6 are found significant at the 10% level in the final logit model. The calculation of marginal effects reveals that having a company web site increases the probability that Internet direct marketing efforts will lead to an increase in total sales by 39.5%. In turn, a ten-acre increase in farm size results in a 1.5% increase in the probability of a revenue increase from online marketing. Finally, communicating with customers by e-mail and sending electronic newsletters increases the probability of a revenue increase by over 40%. As expected, the sex of the respondent (M6) had no significant effect on the probability of a revenue increase from online activities. Whether farmers received online orders via e-mail or a web site was not significant at the 10%

level, which suggests that Internet direct marketing efforts have an important indirect effect on total revenue growth by increasing sales through the traditional marketing channels.

The final OMPR model reported in table 6 includes independent variable C8, Internet direct marketing expenditures of each respondent in 2000, in addition to all the independent variables included in the logit model. The OMPR model performance is acceptable and predicts 55% of the outcomes correctly. Variables A3 and M6 are significant at the 1% level, while A2 is significant at the 10% level. The marginal effect analysis shows that the probability of success increases when farmers use e-mails and electronic newsletters to maintain contact with their customers, which is consistent with the results of the logit model. It also shows that the probability that an LS member will be successful increases by about 10% when the manager is male. While the fact that farmers received online orders did not significantly increase total revenue, the OMPR model results show, as originally expected, that farmer's perception of success is positively associated with receiving online orders. No statistically significant relationships are found between having a company web site and farmers perception of the success of their online activities. This can be explained by the fact that farmers may perceive their Internet marketing activities has being successful even if they receive very marginal benefit from them, as long a they did not invest a significant amount of resources (e.g., by not maintaining a company web site). Perhaps the most striking result is that farmers' investments in Internet direct marketing activities (C8) have no significant impact on the probability of online marketing success, as perceived by LS farmers.

Farmers Comments

This section summarizes comments received from farmers during the preliminary stage of the study and through the web-based surveys. Most farmers contacted were upbeat about the prospects of online direct marketing and were happy to participate in the survey. Several farmers sent follow-up emails after completing the survey to provide us with more detailed comments and information. One reported that she was developing a cooperative web site with other farmers to allow customers to check product availability in real-time, as well as order and pay for products electronically. Another reported increased total sales without spending any money on online advertising or registering with specialized web sites such as Smallfarms.com.

Others indicated that the Internet allowed them to spend less time marketing and promoting their products, and made it much easier to keep in contact with their expanding customer base. Several SF farmers were upgrading their web sites in order to start marketing to a national customer base. While they recognized the potential of the national market, they also expected that it would take time and efforts to develop in this new market.

Numerous SF farmers, who said they intended to grow to the point of setting up sites with a "shopping cart" feature and secure line so that people may order and pay online, did not think about selling outside their local community due to the cost of shipping. Finally, a few farmers complained about their inability to get listed on major search engines such as Yahoo or Altavista, and pointed out that SF was not easy to find on the Internet.

Discussion and Recommendations

The survey revealed that most farmers involved in Internet direct marketing activities see the Internet as an online selling tool. However, most see the Internet as a way to expand their local customer base or increase sales from existing customers rather than acquire new customers outside their local areas. While most farmers surveyed invested increasing amount of money on their Internet direct marketing effort over the last few years, the average expenses per farmer remains modest at less than $600 per year. Although this was not apparent in the econometric analysis, farmers' rankings of success factors suggests that the amount of time invested and available is much more important than the amount of money invested to achieve noticeable results. Given that farmers report an average increase of total revenue of 27% as a result of their Internet marketing activities during the year 2000, time spent on Internet marketing may be time well spent for farmers already involved in conventional direct marketing activities. Note that the sales made through traditional channels as a result of farmers' Internet marketing activities increased over the years, from less than 1% in 1998, to 5% in 1999, and more than 6% of total sales in 2000. Hence, farmers considering using the Internet as a direct marketing tool should be aware that the Internet can reinforce sales through traditional channels but that this spillover effect can take some time before it becomes significant.

Farmers surveyed said that the type of product offered for sale is the most important factor in achieving Internet direct marketing success. However, the importance of this factor is not confirmed in our statistical analysis. Hence, while type of product offered is certainly important, success does not depend on whether or not a farmer markets products in one of the relatively broad product categories defined in the survey: *Fruit and Vegetables, Animal products, livestock, Processed foods,* and *Flowers*. In other

words, a farmer may be equally successful or unsuccessful at selling a given type of products that fits in any one of these five categories. Our results also suggest that the variety of products offered by each farmer may not be an important success factor.

The Internet marketing literature often suggests that products which are not standardized and which requires touch, taste or smell to be evaluated will be hard to sell over the Internet. Most farm products have these characteristics, which may explain why many farmers expect to use the Internet to expand sales to local customers rather than to target more distant customers. This may also explain why, even if they feel offering shipping and delivery services is important in achieving Internet direct marketing success, only one fourth of the respondent actually offer such services.

Location near a major urban center is not an important factor for Internet marketing success. This is confirmed by the farmers directly in their ranking of the most important success factors, but also by the statistical analysis. The implication is that farmers located near smaller markets may also benefit from developing an Internet direct marketing strategy.

Farmers Internet direct marketing strategy needs to include the development of company web site featuring the products for sale. The company web site does not necessarily need to feature credit card payment options, but need to be updated regularly. Membership or listing in a specialized marketplace such as SF or LH does not appear sufficient to achieve Internet marketing success. In addition to the company web site, it appears that sending regular emails to customers would be an important component of the Internet strategy.

Registration of the company web site in generic search engines such as Yahoo or Altavista does not significantly influence Internet marketing success of farmers. This may be explained by the fact that online success often depends more on offline advertising, as suggested by our findings in the preliminary survey which indicated that farmers who advertised their Internet presence on local radio stations were more likely to report successful Internet direct marketing efforts. Given the spillover effect identified in this study, farmers may increase the success of their overall direct marketing efforts by cross-advertising: promoting the company web site through their conventional marketing channels (i.e. put the company web site address on their roadside or farmers market stand as well as packaging material) while promoting conventional marketing activities through the web site.

Relatively larger farms appear to have a higher probability of increasing total revenue through Internet marketing, even if farmers perception of their Internet marketing success is not related to farm size. Older Internet direct marketers are not significantly less or more successful than younger ones, but the average age of our sample (46) indicates that farmers involved in direct marketing activities are relatively younger farmers when compared to the average farmer population in the U.S.. Finally, male appear to perceive their Internet direct marketing activities as more successful than women (which does not necessarily means they are, in fact, more successful).

Concluding Remarks

The objective of this study was to examine some of the factors that affect the success of U.S. farmers' Internet direct marketing. An online survey of members of Smallfarms.com and Localharvest.com was implemented to gather information on the

characteristics and Internet marketing activities of these farmers. A majority of the farmers surveyed already describe their online activities as successful. While most use the Internet as a selling tool, many farmers use it as an information and advertising tool to increase sales in their local area and build consumer loyalty via email newsletters. Only one fourth of the farmers provided long-distance shipping services early in 2001, effectively limiting the potential of Internet direct marketing for their businesses.

Perhaps the most important result of this study is the qualitative and quantitative evidence gathered on the spillover effect of Internet direct marketing activities on conventional direct marketing activities. This confirms the unverified hypothesis made in our preliminary study that Internet and conventional direct marketing activities may be complementary.

Farmers felt that time and expertise were among the most important factors to succeed. Indeed, time is needed to keep the web site updated, and expertise is necessary to offer a better online experience to customers and to reduce time spent on online marketing efforts. The importance and benefits of Internet and computer expertise is confirmed by our finding in the cross-tabulation analysis that a significant number of successful farmer-direct marketers also managed to save time on promotion and advertising by using the Internet. Even innovative farmers such as those listed on SF or LH would benefit from some e-commerce and online marketing training. Many appear not to be fully aware of the numerous free tools and services (e.g., free registration on major web portals such as Yahoo) available to them on the Internet.

The sample of farmers surveyed appears to be composed mostly of relatively small farmers with varying degree of involvement in Internet direct marketing. Further

research is needed on the marketing and management practices of the most successful and committed farmer-direct marketers identified during the survey. Customer surveys may also be necessary to determine what type of farm products are most likely to be successful on the Internet, as this was identified as one of the key success factor.

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APPENDIX A - Implementation of a Low-cost Web-based Survey

The web-based survey was implemented using simple Active Server Page (ASP) code available on most free online ASP tutorials (e.g., learnasp.com) and ran on a personal web server available on any Windows NT or Windows 2000 workstation. One of the authors implemented the survey on his office computer, so that no additional hardware was required. Learning enough ASP to be able to implement the survey took only a few days. This approach is sufficient for a small-scale web-based survey, i.e., when you do not expect more than 10 respondents will complete the survey simultaneously. Hence, the data collection costs were near zero, as compared to a traditional mail survey that could have been expected to cost $2.00 per person surveyed, and would have required someone to enter the data into a computer for analysis. The data was stored on a Microsoft Access Database, included in all standard Microsoft office packages.

The initial contact was made with the following e-mail message:

Subject: Help U.S Agriculture

Sir/Madam,
My name is XXXX, Department of XXXX, XXXX University. You have been identified as one of very few innovative producers marketing its product via the Internet. I would greatly appreciate it if you could take about 10 minutes of your time to fill out the survey located at:

http://agribusiness.xxx.edu/smallfarm/sm1.asp

We are trying to determine the factors that affect failure or success of direct marketing of farm products via the Internet. Information collected will allow us to develop agricultural extension programs to help producers market their products online more effectively. NO MATTER WHAT YOUR EXPERIENCE WITH THE INTERNET HAS BEEN, your participation in the survey is crucial. Information collected will remain completely confidential. You will be given the opportunity to request a summary of the results of this study when you fill out the survey.

Approximately twenty-five e-mails were sent daily in order to dispense responses over the week, and keep from overloading the personal web server. After the cycle was complete, a second e-mail was sent that reiterated the need for the farmer to make the survey a success, and the potential to help U.S. Agriculture. The subject line of the second e-mail (deemed very important in Internet survey because it influences greatly whether an e-mail will be opened and read) was changed to “Direct marketing of Farm Products”. A final e-mail titled “Direct marketing of Farm Products: last attempt” was sent to the non-respondents after the second cycle, revealing it was the final attempt.

Table 1. Product Categories

Category	Number (% by total respondents)
Fruit and Veg.	49 (57%)
Animal Products	36 (42%)
Livestock	33 (38%)
Processed	15 (17%)
Flowers	30 (35%)
Other	26 (30%)

Table 2. Marketing Activity

		Internet	Information	Local Purchasing
What is the primary objective of your Internet marketing activity?		48.31%	11.24%	40.45%
			Average	**Std. Dev.**
How much money did you spend on your Internet direct marketing effort	*1998*		$ 229.30	149.90
	1999		$ 380.50	329.52
	2000		$ 569.80	660.36
		Yes	**No**	
Do you have a company web site?		72%	28%	
		Yes	**No**	
If yes, have you registered with a search engine		63%	38%	
		Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
The information on my web site is up to date and accurate:		6%	15%	44%	35%
		Average	**Std Dev.**		
How much time do you spend on the computer per week?		17.35	12.37		
		Yes	**No**		
Do you feel the Internet has reduced your time mktg., promoting, etc.?		37%	63%		
		Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
My Internet activity has been successful:		13%	28%	49%	10%
		Yes	**No**		
Do you use the Internet as a tool to communicate with customers by e-mail?		67%	33%		
		Nationwide	**Locally**	**No**	
Do you ship or deliver products ordered on the Internet?		24%	56%	20%	

Table 3. Internet Direct Marketing Success Factors

Factors for Success	Average	Rank
Type of product offered	4.11	1
Having a company web site	3.49	2
Available time	3.29	3
Experience with Internet & computers	3.28	4
Variety of product offered	3.15	5
Offer purchases by credit card	3.11	6
Shipping options	3.05	7
Sending regular e-mail newsletters	2.90	8
Location of your farm	2.67	9
Money spent on Internet activity	2.41	10

Table 4. Internet Sales and Customer Loyalty

		Yes	No	
Has your Internet presence Increased total sales?		62%	38%	
			Average	**Std. Dev.**
If yes, by what amount (as a percentage of total sales)?	1998		30.7	21.29
	1999		26.7	26.04
	2000		27.3	28.90
		Yes	**No**	
Did you receive order over the Internet through e-mail or web site?		74%	26%	
			Average	**Std. Dev.**
If yes, what percentage of total sales do these orders represent	*1998*		30.1	21.04
	1999		21.7	23.42
	2000		21	26.01
		Yes	**No**	
Have you noticed an increase in customer loyalty due to your Internet presence?		*30%*	70%	

Table 5 - Selected Explanatory Variables, Expected Effect, and Cross-Tabulation Analysis

Selected Explanatory Variables	Expected Relationship with A4 (Revenue Growth from Internet Marketing) and A5 (Internet Marketing Success)	Cross-Tabulation Analysis	
		A4	A5
		Chi square (P-value)	Chi square (P-value)
Demographics			
Sex	No a priori expected relationship	0.05 (0.81)	0.71 (0.39)
Marital Status	No a priori expected relationship (married farmers with children may have less time available)	0.20 (0.65)	0.48 (0.48)
Age	Older farmers may be less successful and achieve lower sales growth	0.01 (0.91)	0.00 (0.94)
Size of Farm in acres	No a priori expected relationship	3.32 (0.06)	0.74 (0.38)
Size of urban area nearest to farm	Farmers who are located near larger urban areas will be more successful and generate higher sales growth	1.53 (0.67)	1.94 (0.58)
Time spent on a computer every week	Farmers who spend more time on a computer have more experience, and thus will be more successful and generate higher sales growth	0.28 (0.59)	1.89 (0.16)
Characteristics of Internet Direct Marketing Activities			
Objective of Internet Marketing Activity	Farmers who see the Internet as a selling tool will have higher revenue growth from Internet marketing / will feel less successful	0.16 (0.92)	2.7 (0.24)
Ownership a company (farm) web site	Farmers with a company website will be more successful and generate higher sales growth	11.27 (0.00)	7.82 (0.00)
Regular update of the website	Farmers who regularly update their website will be more successful and generate higher sales growth	4.43 (0.03)	4.53 (0.03)
Money allocated to Internet marketing	Farmers who spend more money on Internet marketing will be more successful and generate higher sales growth	3.1 (0.12)	2.8 (0.21)
Send regular email newsletter	Farmers who send regualr email newsletters will be more successful and generate higher sales growth	19.18 (0.00)	7.44 (0.00)
Register with a generic search engine (such as Yahoo or Altavista)	Farmers who regularly update their website will be more successful and generate higher sales growth	0.14 (0.70)	0.06 (0.79)
Provide shipping options	Farmers who provide shipping options will be more successful and generate higher sales growth	4.05 (0.04)	0.95 (0.32)
Internet marketing reduced total time spent on promotion/advertising activities	Farmers who agree that Internet marketing will reduce overall time spent on promotion /advertising activities will be more successful and generate higher sales growth	3.85 (0.04)	7.48 (0.006)
Internet marketing increased customer loyalty	Farmers who see an increase in customer loyalty will be more successful and generate higher sales growth	19.29 (0.00)	10.28 (0.00)
Orders received from website or via email	Farmers who received orders from website or via email will be more successful and generate higher sales growth	8.54 (0.00)	5.97 (0.01)

Table 6. Econometric Analysis Results

Dependent variable	**A5 (Your online marketing activities have been successful)**	**A4 (Increase in total revenue from Internet marketing efforts)**
Regression Model	Ordered Multinomial Probit	Binomial Logit
Independent variables	Coefficient (std)	Coefficient (std)
A2 (Did you receive order over the Internet through e-mail or web site?)	0.838 (0.510)***	1.205 (0.764)
A3 (Do you use the Internet as a tool to communicate with customers by e-mail?)	0.857 (0.370)**	2.110 (0.722)*
C4 (Do you have a company web site?)	0.076 (0.409)	2.064 (0.815)*
D6 (What is the size of your farm in acres?)	-0.003 (.002)	0.008 (0.005)***
M6 (Are you male or female?)	0.579 (0.337)***	0.470 (0.723)
C8 (How much money did you spend on your Internet direct marketing effort?)	0.0003 (0.0004)	

Note: * significant at 1% level ** significant at the 5% level ***significant at 10% level